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NOV - 1 2018

Ref: 8P-AR

Mr. Dave Klemp, Bureau Chief
Air Resources Management Bureau
Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901

Dear Mr. Klemp:

This letter is in response to your letter of April 24, 2017, requesting the U.S. Environmental Protection Agency's concurrence on exceptional event claims for fine ($PM_{2.5}$) and course (PM_{10}) particulate matter data impacted by wildfires in 2015 and 2016. The Montana Department of Environmental Quality (DEQ) determined that regional wildfire smoke events caused exceedances of the 24-hour $PM_{2.5}$ and PM_{10} National Ambient Air Quality Standards (NAAQS) at monitoring sites across Montana in 2015 and 2016. In addition, the DEQ determined that the smoke events caused multiple sites to exceed 98 $\mu g/m^3$, which is the eligibly threshold for the use of a limited maintenance plan (LMP) for a nonattainment area redesignation. The DEQ has flagged these data to support future plans to redesignate PM_{10} nonattainment areas using the LMP Policy.

The EPA concurs with the Montana DEQ's determination that the 24-hour PM_{10} exceedance at the Libby monitoring site on August 24, 2015, and the PM_{10} exceedances at the Missoula monitoring site on August 28 and August 29, 2015, meet the criteria for an exceptional event in the Exceptional Events Rule (EER). The basis for this concurrence is set forth in the enclosed technical support document. Concurrence flags have been entered for these data in the EPA's Air Quality System (AQS) database. For those PM_{10} values in August 2015 and the one value in August 2016 that exceeded the LMP Policy eligibility threshold, (98 $\mu g/m^3$)but were under the minimum value that is determined to be an exceedance of the PM_{10} NAAQS (155 $\mu g/m^3$), the EPA concurs that the elevated PM_{10} concentrations meet the general definition and criteria for exceptional events, and thus in accordance with EPA guidance, those values may be excluded when considering whether the areas are eligible for use under the LMP Policy for PM_{10}.

The EPA, at this time, has not reviewed the $PM_{2.5}$ exceptional event requests. 40 CFR 51.14(a)(1)(i) limits the applicability of the EER to data concerning NAAQS exceedances or violations that are relevant to regulatory determinations by the EPA. Data in AQS flagged as exceptional events that are not relevant to regulatory determinations will not be reviewed by the EPA for concurrence. The EPA has determined that the $PM_{2.5}$ data do not have any regulatory significance. In the event that any of the data on which the EPA is deferring action become significant for a future regulatory action, the EPA will retain the demonstration for potential

future consideration.

The determination conveyed in this letter does not constitute final action regarding any matter on which the EPA is required to provide an opportunity for public comment. In particular, this applies to determinations regarding the attainment status or classification of this area. Final actions will take place only after the EPA completes notice and comment rulemaking on those determinations.

If you have any questions on this matter, you may contact me at (303) 312-6776 or your staff may contact Ethan Brown, of my staff, at (303) 312-6403.

Sincerely,

Martin Hestmark

Martin Hestmark
Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

Enclosure

cc: Annette Williams, Montana DEQ

ENCLOSURE: TECHNICAL SUPPORT DOCUMENT FOR EPA CONCURRENCE ON WILDFIRE INFLUENCED PM_{10} DATA IN MONTANA NONATTAINMENT AREAS IN 2015 AND 2016 AS (1) EXCEPTIONAL EVENTS, AND (2) ABLE TO BE EXCLUDED WHEN CONSIDERING WHETHER AREAS ARE ELIGIBLE FOR USE UNDER THE EPA LIMITED MAINTENANCE PLAN POLICY FOR PM_{10}

In the summers of 2015 and 2016, the Montana Department of Environmental Quality (DEQ) identified that wildfires in Montana and upwind states may have caused $PM_{2.5}$ and PM_{10} exceedances at several monitoring sites operated by the DEQ. Under the Environmental Protection Agency (EPA) Exceptional Events Rule (EER), air agencies can request the exclusion of event-influenced data, and the EPA can agree to exclude these data, from the data set used for certain regulatory decisions. The remainder of this document summarizes the EER requirements, the wildfire events and the EPA's review process.

EXCEPTIONAL EVENTS RULE REQUIREMENTS

The EPA promulgated the EER in 2007, pursuant to the 2005 amendment of Clean Air Act (CAA) section 319. In 2016, the EPA finalized revisions to the EER. The 2007 EER and the 2016 revisions added 40 CFR 50.1(j)-(r); 50.14; and 51.930 to the Code of Federal Regulations (CFR). These sections contain definitions, criteria for EPA approval, procedural requirements, and requirements for air agency demonstrations. The EPA reviews the information and analyses in the air agency's demonstration package using a weight of evidence approach and decides to concur or not concur. The demonstration must satisfy all of the EER criteria for the EPA to concur with excluding the air quality data from regulatory decisions.

Under 40 CFR 50.14(c)(3)(iv), the air agency demonstration to justify data exclusion must include:

> A. "A narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s);"
> B. "A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation;"
> C. "Analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times" to support requirement (B) above;
> D. "A demonstration that the event was both not reasonably controllable and not reasonably preventable;" and
> E. "A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event."[1]

In addition, the air agency must meet several procedural requirements, including:

> 1. submission of an Initial Notification of Potential Exceptional Event and flagging of the affected data in the EPA's Air Quality System (AQS) in accordance with 40 CFR 50.14(c)(2)(i);
> 2. completion and documentation of the public comment process in accordance with 40 CFR 50.14(c)(3)(v); and
> 3. implementation of any applicable mitigation requirements in accordance with 40 CFR 51.930.

[1] A natural event is further described in 40 CFR 50.1(k) as "an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions.

For data influenced by exceptional events to be used in initial area designations, air agencies must also meet the initial notification and demonstration submission deadlines specified in Table 2 to 40 CFR 50.14. We include below a summary of the EER criteria, including those identified in 40 CFR 50.14(c)(3)(iv).

Regulatory Significance

The 2016 EER includes regulatory language that applies the provisions of CAA section 319 to a specific set of regulatory actions. As identified in 40 CFR 50.14(a)(1)(i), these regulatory actions include initial area designations and redesignations; area classifications; attainment determinations (including clean data determinations); attainment date extensions; findings of State Implementation Plan (SIP) inadequacy leading to a SIP call; and other actions on a case-by-case basis as determined by the Administrator. Air agencies and the EPA should discuss the regulatory significance of an exceptional event demonstration during the Initial Notification of Potential Exceptional Event prior to the air agency submitting a demonstration for the EPA's review.

Narrative Conceptual Model

A wildfire is defined in 40 CFR 50.1(n) as "any fire started by an unplanned ignition caused by lightning; volcanoes; other acts of nature; unauthorized activity; or accidental, human-caused actions, or a prescribed fire that has developed into a wildfire. A wildfire that predominantly occurs on wildland is a natural event." Wildland is defined in 40 CFR 50.1(o) as "an area in which human activity and development are essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any, are widely scattered."

The EPA expects that a narrative conceptual model of the event will describe and summarize the event in question and provide context for analyzing the required statutory and regulatory technical criteria. Air agencies may support the narrative conceptual model with summary tables, satellite images, maps, etc. For high particulate matter events resulting from wildland fires, the EPA recommends that the narrative conceptual model discuss the interaction of emissions and meteorology and, under 40 CFR 50.14(a)(1)(i), the regulatory significance of the requested data exclusion.

Clear Causal Relationship and Supporting Analyses

The EPA considers a variety of evidence when evaluating whether there is a Clear Causal Relationship (CCR) between the specific event and the monitored exceedance or violation. For high particulate matter concentrations resulting from wildland fires, air agencies should compare the relevant particulate matter data requested for exclusion with historical concentrations at the affected air quality monitor to establish a CCR between the event and the monitored data. In addition to providing this information on the historical context for the event-influenced data, air agencies should further support the CCR criterion by providing evidence that the wildfire's emissions were transported to the monitor and that the emissions from the wildfire influenced the monitored concentrations.

Not Reasonably Controllable or Preventable (NRCP)

The EPA requires that air agencies establish that the event be both not reasonably controllable and not reasonably preventable at the time the event occurred. This requirement applies to both natural events and events caused by human activities; however, if the event was caused by a wildfire on wildlands, it will be presumed that both "not reasonably controllable or preventable" elements have been met, unless evidence in the record clearly demonstrates otherwise.

Natural Event or Event Caused by Human Activity That is Unlikely to Recur

According to the CAA and the EER, an exceptional event must be "an event caused by human activity that is unlikely to recur at a particular location ***or*** a natural event" (emphasis added). The 2016 EER includes in the definition of wildfire that "[a] wildfire that predominantly occurs on wildland is a natural event." Once an agency provides evidence that a wildfire on wildland occurred and demonstrates that there is a CCR between the measurement under consideration and the event, the EPA expects minimal documentation to satisfy the "human activity that is unlikely to recur at a particular location or a natural event" element. The EPA will address wildfires on other lands on a case-by-case basis.

EXCLUDING DATA UNDER THE LIMITED MAINTENANCE PLAN POLICY FOR PM_{10} IN A MATTER ANALOGOUS TO THE TREATMENT OF DATA UNDER THE EER

For PM_{10}, the Montana demonstration includes exceedance-level PM_{10} monitored values, as well PM_{10} monitored values between 98 $\mu g/m^3$ and 155 $\mu g/m^3$, as these values can affect the eligibility of an area requesting redesignation to utilize the Limited Maintenance Plan (LMP) Option for Moderate PM_{10} Nonattainment Areas (NAAs).[2] To be eligible for the LMP option, an area must show that the average design value for the area, considering the most recent 5 years of air quality data, is below 98 $\mu g/m^3$ for the PM_{10} standard and there are no violations at any monitor in the NAAs. A monitored value of 155 µg/m3 or greater is determined to be an exceedance of the PM10 NAAQS. The 2001 LMP policy memo provides that data greater than 98 $\mu g/m^3$ which have been impacted by exceptional or natural events could be discounted in design value calculations consistent with policies in place in 2001. With the promulgation of the EER in 2007, a subsequent policy memo stated that:

"In determining eligibility for the limited maintenance plan option EPA will treat 24-hour average air quality data between 98 $\mu g/m^3$ and 155 $\mu g/m^3$ in a manner analogous to the treatment of exceedance data under the EER, provided the impacted data meet the general definition and criteria for exceptional events (natural event, or exceptional event that is not reasonably controllable or expected to recur).[3]"

EPA REVIEW OF EXCEPTIONAL EVENT DEMONSTRATION AND OF DATA PROPOSED FOR EXCLUSION FROM CONSIDERATION UNDER THE LIMITED MAINTENANCE PLAN POLICY FOR PM10

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[2] Limited Maintenance Plan Option for Moderate PM_{10} Nonattainment Areas, US EPA, Lydia Wegman, Director, AQSSD, OAQPS, August 21, 2001, https://archive.epa.gov/ttn/pm/web/pdf/lmp_final.pdf. Hereafter abbreviated LMP option or 2001 LMP policy memo.

[3] Update on Application of the Exceptional Events Rule to the PM_{10} Limited Maintenance Plan Option, US EPA, William T. Harnett, Director, Air Quality Policy Division, OAQPS, May 7, 2009, https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/20090507_harnett_lmp_pm10_update_exc_event.pdf. Hereafter abbreviated 2009 LMP policy memo.

On January 31, 2017, Montana DEQ and the EPA Region 8 conducted an initial notification telephone discussion for potential wildfire-caused $PM_{2.5}$ and PM_{10} exceptional events in the summers of 2015 and 2016. On April 24, 2017, the Montana DEQ submitted a demonstration for wildfire exceptional events that have a potential to impact the 24-hour $PM_{2.5}$ and PM_{10} standards that occurred at the monitoring stations throughout Montana in the summers of 2015 and 2016. For $PM_{2.5}$ data, the Montana demonstration includes the 24-hour exceedance level $PM_{2.5}$ monitored values influenced by wildfire smoke.

Regulatory Significance

Currently, the entirety of Montana is designated as Unclassifiable/Attainment for the 2006 24-hour $PM_{2.5}$ NAAQS and for the 2012 annual average $PM_{2.5}$ NAAQS, and at this time, there are no plans for redesignations. Therefore, the EPA does not intend to act on the $PM_{2.5}$ exceptional events submitted in this demonstration because they do not affect a regulatory determination as specified in the EER. If, at a future time, these data affect any regulatory determination, the demonstration will be revisited.

On August 3, 2016, the Montana DEQ submitted a redesignation request to the EPA for the Missoula PM_{10} NAA. Redesignations are one of the five types of regulatory determinations by the EPA Administrator to which the EER applies. In January 2017, Montana DEQ informed the EPA that it intended to develop maintenance plans and redesignation requests for additional PM_{10} NAAs. These areas include: Silver Bow County, Butte; Flathead County partial, Columbia Falls and vicinity; Flathead Country partial, Kalispell; Flathead Country partial, Whitefish and vicinity; Lincoln County partial, Libby; Sanders County partial, Thompson Falls and vicinity NAAs. It is the EPA's understanding that Montana DEQ is currently working on these maintenance plans and redesignation requests. Montana DEQ indicated that they plan to use the LMP option when they submit their maintenance plans for these identified NAAs. As stated above, with the promulgation of the EER in 2007, a subsequent LMP policy memo stated that:

"In determining eligibility for the limited maintenance plan option the EPA will treat 24-hour average air quality data between 98 $\mu g/m^3$ and 155 $\mu g/m^3$ in a manner analogous to the treatment of exceedance data under the EER, provided the impacted data meet the general definition and criteria for exceptional events (natural event, or exceptional event that is not reasonably controllable or expected to recur)."

Therefore, the Montana demonstration includes exceedance-level PM_{10} monitored values, as well PM_{10} monitored values between 98 $\mu g/m^3$ and 155 $\mu g/m^3$, as these values can affect the eligibility of an area requesting redesignation to utilize the LMP option.

Table 1 summarizes the PM_{10} data for the seven NAAs that Montana DEQ has requested the EPA evaluate for exclusion from design value calculations for the purposes of determining eligibility for the PM_{10} LMP option. All these data were included in the exceptional event demonstration submitted to the EPA on April 24, 2017. The EPA will evaluate the PM_{10} exceedances under the EER, and consider the remaining data in a manner analogous to the rule in accordance with the EPA's guidance on the LMP option. Therefore, although all of the submitted PM_{10} data will be evaluated in this TSD, for purposes of the EER, the EPA will only concur with the exceptional event flags for those values that exceed the standard, have regulatory significance, and are considered exceptional events by definition. Additionally, for purposes of the LMP option, for those values in August 2015, and the one value in August 2016, that exceeded the LMP eligibility threshold of 98 $\mu g/m^3$ but were under 155 $\mu g/m^3$, the

EPA will concur that the elevated PM_{10} concentrations were caused by wildfire smoke, and the data may be excluded when considering whether the areas are eligible for use under the LMP option.

Table 1. Summary of 24-hour PM_{10} Concentration ($\mu g/m^3$) Data to be Evaluated

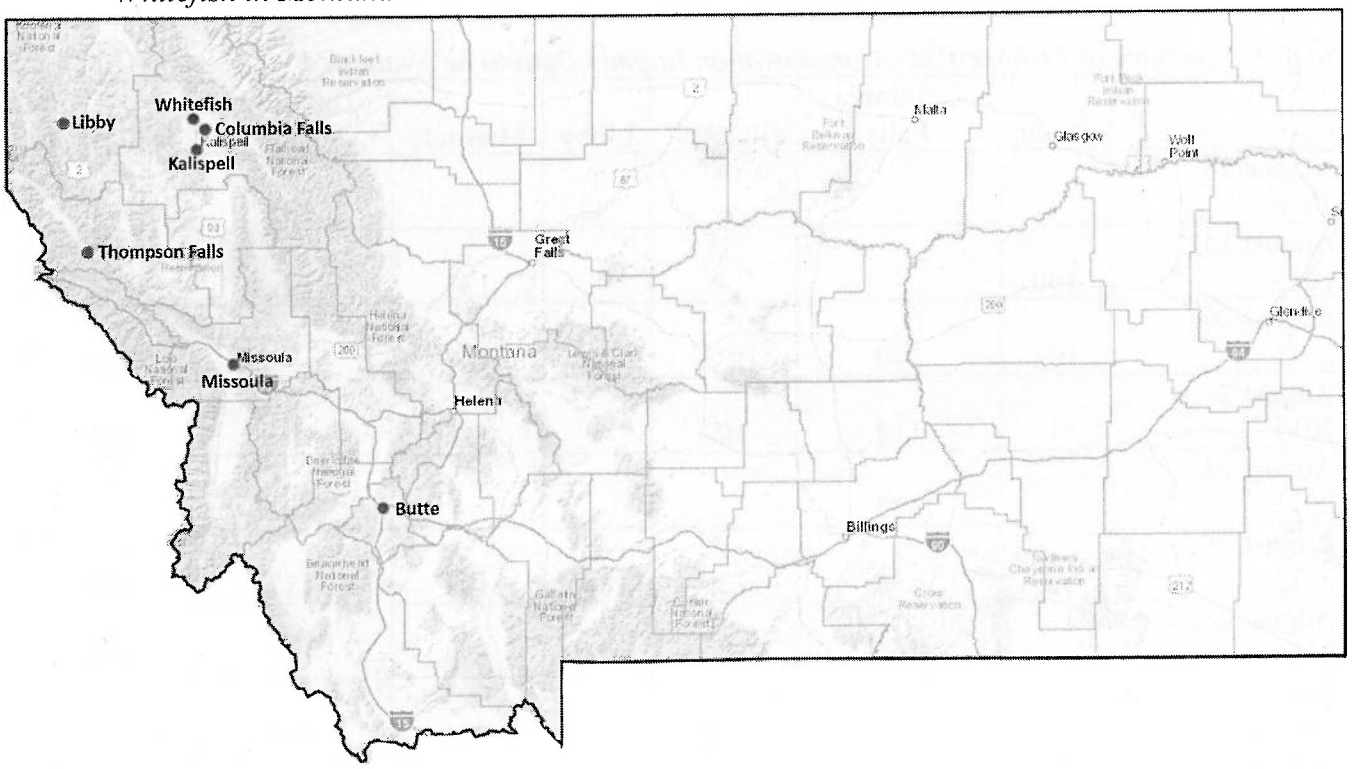
Date	Butte	Columbia Falls	Kalispell	Libby	Missoula	Thompson Falls	Whitefish
August 14, 2016	-	-	-	-	-	105	-
August 15, 2015	100	-	-	-	133	-	-
August 20, 2015	103	140	125	113	101	-	128
August 21, 2015	-	112	103	-	116	-	131
August 23, 2015	-	112	-	-	-	-	-
August 24, 2015	-	138	139	**180***	104	117	122
August 25, 2015	-	109	-	102	120	-	106
August 26, 2015	-	112	125	-	104	135	-
August 27, 2015	-	136	123	109	119	122	118
August 28, 2015	115	135	133	-	**181***	-	110
August 29, 2015	118	138	146	143	**276***	143	104
August 30, 2016	-	-	-	-	-	135	-

* Exceedance flagged as exceptional event.

Narrative Conceptual Model

Butte, Columbia Falls, Kalispell, Libby, Missoula, Thompson Falls, and Whitefish are all located in the Rocky Mountains in western Montana. Columbia Falls (3,087 ft.), Kalispell (2,956 ft.), and Whitefish (3,028 ft.) all lie within Flathead Valley, whereas Butte (5,538 ft.), Libby (2,096 ft.), Missoula (3,209 ft.), and Thompson Falls (2,556 ft.) lie along narrower river or stream valleys. See the map in Figure 1.

Figure 1. Relative Locations of Butte, Columbia Falls, Kalispell, Libby, Missoula, Thompson Falls, and Whitefish in Montana



Under normal circumstances, PM_{10} in western Montana is generally low with annual average concentrations around 10 to 30 $\mu g/m^3$. Excluding the effects of wildfire smoke, the highest concentrations often occur in the winter months, and are usually the result of temperature inversions and heating fuel combustion. Lower PM_{10} concentrations generally persist through the spring and summer. Elevated PM_{10} concentrations in summer almost always coincide with wildfire smoke, as indicated by wildfire flags applied to the data in AQS (see the Historical Data for Context section).

In 2015, over 10 million acres burned due to wildfires in the United States (Figure 2), which is the largest annual loss on record.[4] This included a loss of approximately 351,000 acres in Montana, 804,000 acres in Idaho, and 1,138,000 acres in Washington state.[5] In addition, there were numerous large fires in western Canada. Most of these fires occurred on Bureau of Land Management (4,770,133 acres) and Forest Service (1,916,302 acres) land (Figure 3).[6]

Figure 3 shows all active fires identified on August 24, 2015, by the NOAA Hazard Mapping System (HMS), and Figure 4 shows the Moderate Resolution Imaging Spectroradiometer (MODIS) Terra image from the same date. These figures of one impacted day illustrate the extent of the fires and smoke across this area of the United States, and suggest that smoke was not produced from a single fire, but instead was a product of many fires over a vast area.

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[4] National Interagency Fire Center. "Total Wildland Fires and Acres (1960-2015)." Accessed May 9, 2018, https://www.nifc.gov/fireInfo/fireInfo_stats_totalFires.html.

[5] Insurance Information Institute, "Facts + Statistics: Wildfires." Accessed May 9, 2017, http://www.iii.org/fact-statistic/wildfires.

[6] National Interagency Fire Center. "Wildland Fire Summary and Statistics Annual Report 2015." Accessed June 1, 2018, https://www.predictiveservices.nifc.gov/intelligence/2015_Statssumm/annual_report_2015.pdf.

Figure 2 Idaho and Montana Annual Fire Acreage, 2002-2016

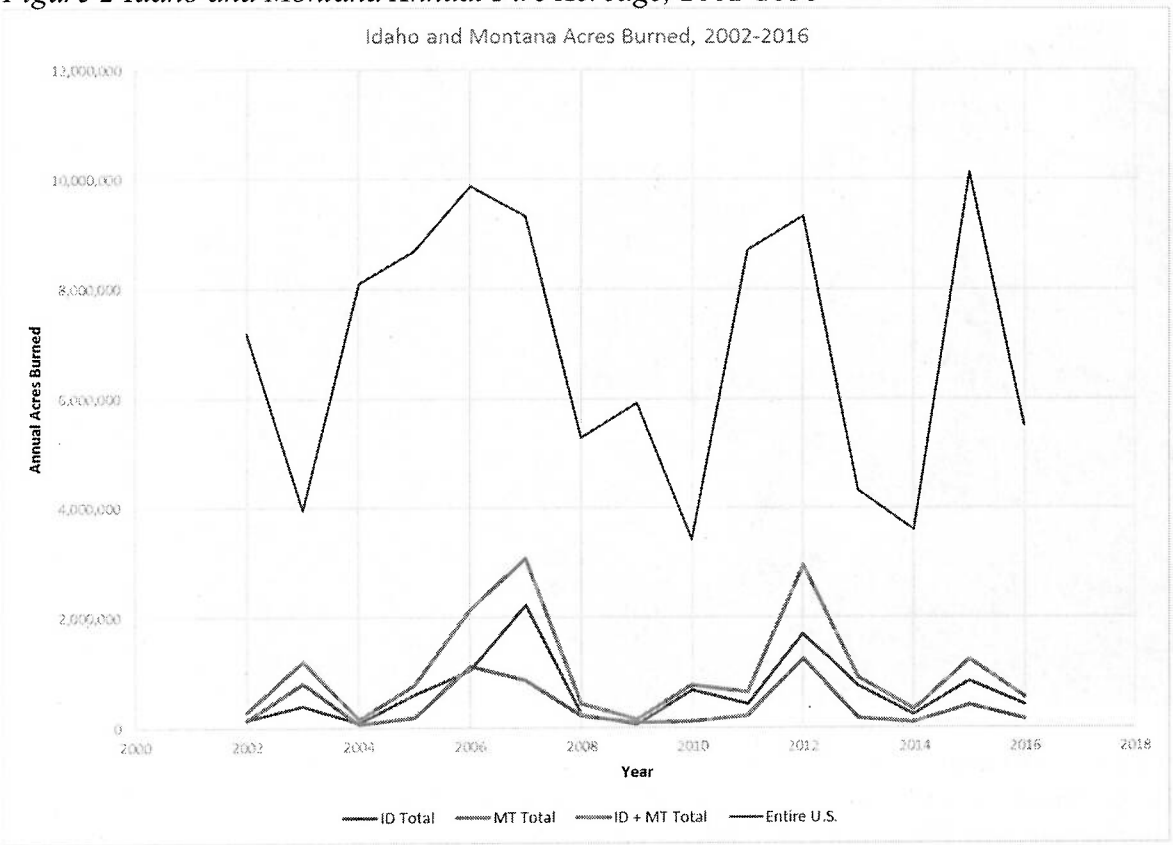


Figure 3. Location of all active fires detected on August 24, 2015 (NOAA HMS)

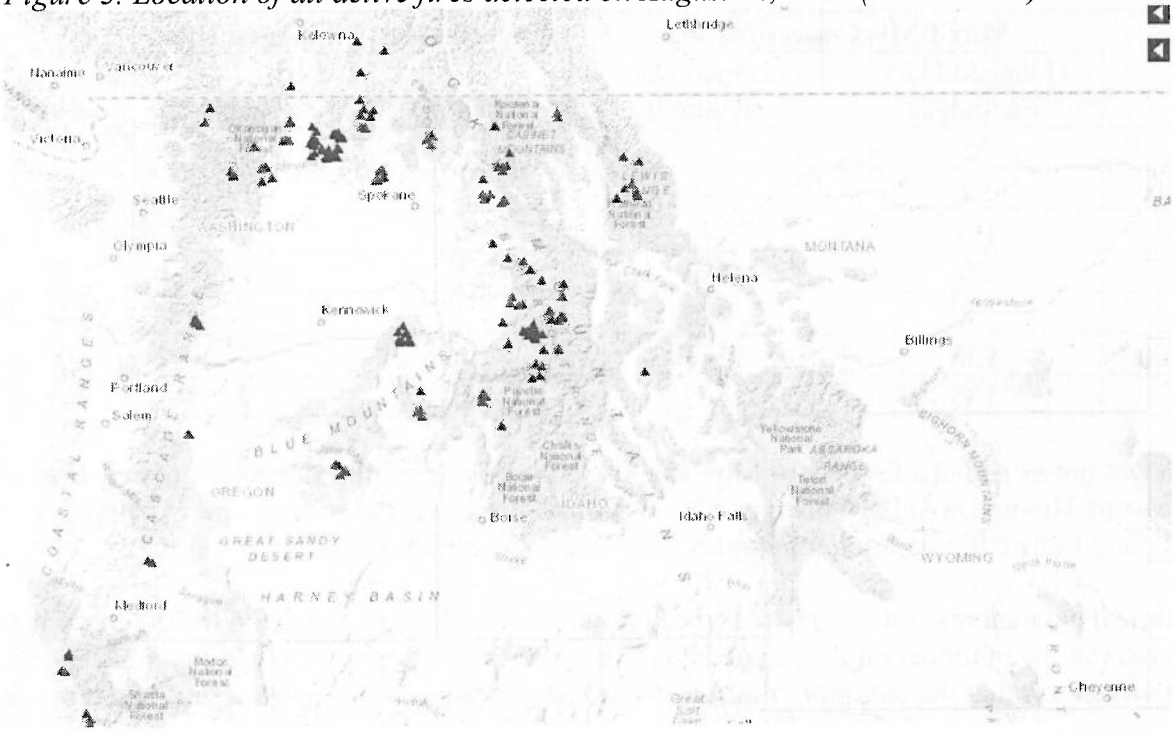
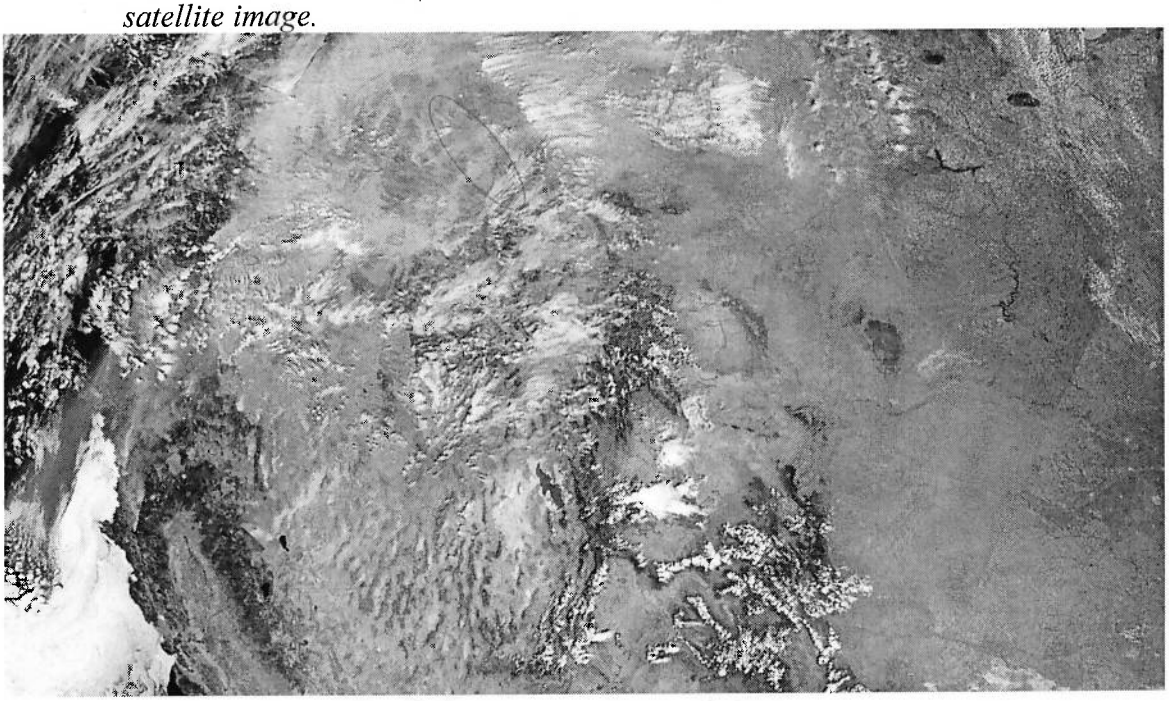


Figure 4. Widespread smoke plume across the northwestern United States and northern Rockies on August 24, 2015. The general area where exceptional events were reported is circled on the satellite image.



In the summer of 2015, Montana DEQ placed wildfire flags on multiple daily PM_{10} samples at the seven sites included in the demonstration (Table 2). These flagged data ranged from 100 $\mu g/m^3$ to 276 $\mu g/m^3$. The maximum unflagged daily PM_{10} value throughout 2015 was 135 $\mu g/m^3$.

Table 2. Maximum 2015 PM_{10} concentrations of flagged and unflagged days, number of exceedances, and flagged days.

	Max PM_{10} Concentration		**Exceedances**	**Flagged Days**
	(Flagged Data Excluded)	(Flagged Data Included)	(Count)	(Count)
Butte	65	118	0	29
Columbia Falls	97	140	0	29
Kalispell	102	146	0	7
Libby	80	180	1	40
Missoula	78	276	2	24
Thompson Falls	135	143	0	5
Whitefish	135	135	0	7

Although 2016 was not as active a fireyear in Montana or the western U.S., the Copper King Fire started 8 miles to the east of Thompson Falls. On August 30, 2017, the fire was still burning, and existing meteorological conditions allowed smoke to impact the PM_{10} concentrations in Thompson Falls.

Given that historical data values at the sites are typically less than the flagged data, and the evidence that smoke plumes were at the monitors on the flagged days, the conceptual model for the high August 2015 (and August 2016) data is that the data from the sites would have been well below 98 $\mu g/m^3$ had the smoke not been present. The remaining sections will provide evidence for this model.

Clear Causal Relationship and Supporting Analyses

Historical Data for Context

The 2016 EER recommended a number of analyses which could be of value in comparing flagged values to historical data. The supporting information recommends analyzing at least 5 years of data when comparing exceptional even to historical concentrations. Some of the analyses may provide more insight for a given demonstration than others, and not every analysis is required in every demonstration. The analyses recommended in the Final Revisions to the Exceptional Events Rule Federal Register Notice[7] (Final Revisions to the EER) are:

> Compare the concentrations on the claimed event day with past historical data.
> Demonstrate spatial and/or temporal variability of the pollutant of interest in the area.
> Determine percentile ranking.
> Plot annual time series to show the range of "normal" values (i.e., display interannual variability).
> Identify all "high" values in all plots.
> Identify historical trends (optional if this trends analysis provides no additional "weight").
> Identify diurnal or seasonal patterns.

Montana submitted historical graphs for each of the sites with flagged data (see Historical Graphs for 2015 and 2016 PM_{10} exceptional events section of the Montana DEQ demonstration). These graphs show the June 1 – October 31 daily average PM_{10} value (presumed wildfire season) for the historical data available from each site through 2014. The EPA has augmented this information with the following historical comparisons for PM_{10} to reflect the analyses recommended in the Final Revisions to the EER.

As shown in Table 3, there have been relatively few exceedances at these sites recently. In the past 25 years, all but two of the exceedances have been flagged as exceptional events. Of the four PM_{10} exceedances from 2011 through 2016, all have been flagged due to wildfire smoke impacts. The remainder of the analyses will focus on data from 2011 through 2016, as all sites have data from this time period, and it satisfies the minimum suggested time period (minimum of 5 years) for analyses.

[7] Treatment of Data Influenced by Exceptional Events, Vol. 81 FR 68216 (final rule Oct. 3, 2016) (to be codified at 40 CFR pts. 50 and 51)

Table 3. Historical PM_{10} Exceedances (>150 $\mu g/m^3$) in Relevant MT NAAs

Location:	Butte	Columbia Falls	Kalispell	Libby	Missoula	Thompson Falls	Whitefish
Site ID:	**30-093-0005**	**30-029-0049**	**30-029-0047**	**30-053-0018**	**30-063-0024**	**30-089-0007**	**30-029-0009**
1984	-	-	-	-	0	-	-
1985	7	-	-	-	-	-	-
1986	6	-	-	-	6	-	-
1987	5	-	-	-	3	-	-
1988	11	-	-	-	1	-	-
1989	1	-	-	-	2	-	-
1990	0	-	-	-	0	-	-
1991	0	-	-	-	1	-	-
1992	0	-	-	-	0	-	-
1993	0	-	-	0	0	-	-
1994	0	-	-	0	0	-	-
1995	0	-	-	0	0	-	-
1996	0	-	-	0	0	-	-
1997	0	-	-	0	0	-	-
1998	1	-	-	0	0	-	-
1999	0	-	0	0	0	0	-
2000	**1***	-	0	0	**3***	0	-
2001	0	-	0	0	0	0	0
2002	0	-	0	0	0	0	0
2003	0	-	0	0	0	0	0
2004	0	-	0	0	0	0	0
2005	0	-	0	0	0	0	0
2006	0	-	0	0	0	0	1
2007	**3***	-	0	0	0	0	0
2008	0	-	0	0	0	0	0
2009	0	-	0	0	0	0	0
2010	0	-	0	0	0	0	0
2011	0	0	0	0	0	0	0
2012	**1***	0	0	0	0	0	0
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	**1***	**2***	0	0
2016	0	0	0	0	0	0	0

* Exceedance flagged as exceptional event.

Figure 5 through Figure 11 shows the average daily PM_{10} concentrations at the seven sites from 2011 through 2016. Each figure shows the routine data, the submitted exceptional event data, and other wildfire flags throughout the time period. The wildfire flags generally occur between days 180 and 300, or the beginning of July through the end of October.

Figure 5. Butte Daily Average PM_{10} Concentrations from 2011-2016

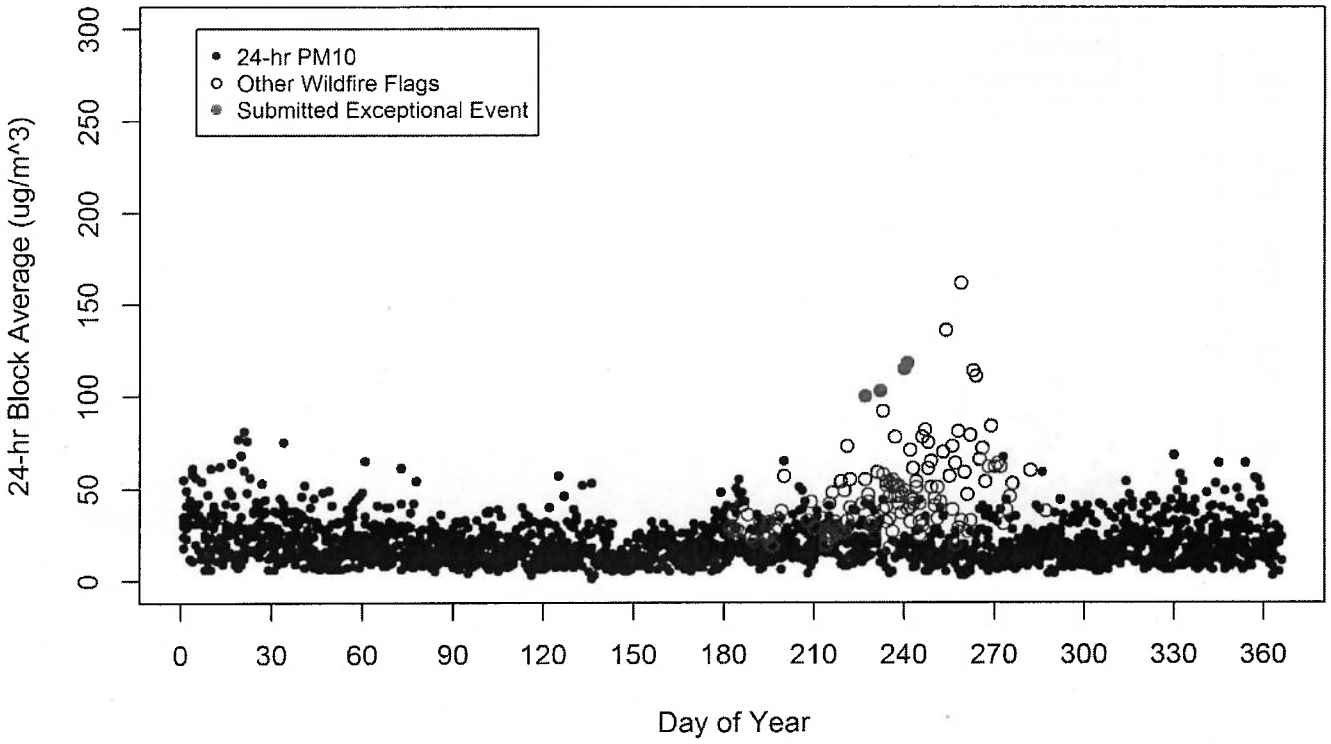


Figure 6. Columbia Falls Daily Average PM_{10} Concentrations from 2011-2016

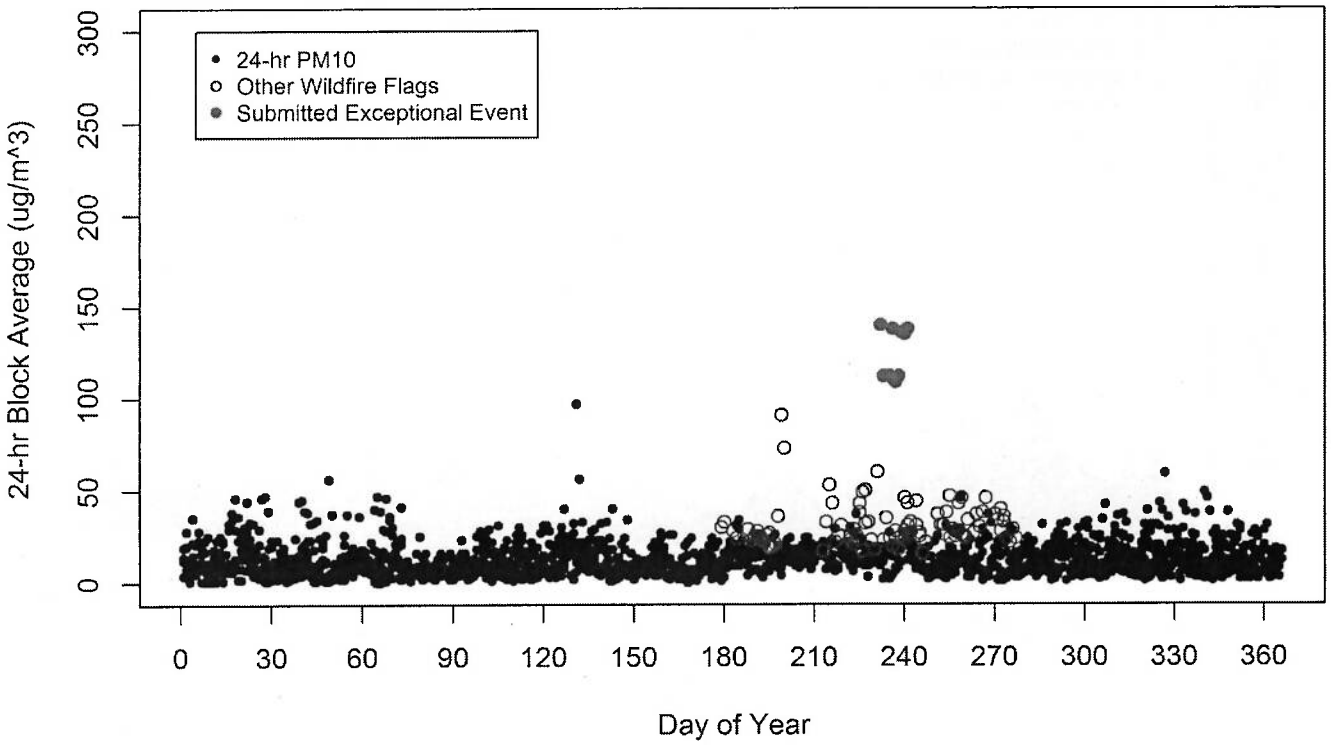


Figure 7. Kalispell Daily Average PM_{10} Concentrations from 2011-2016

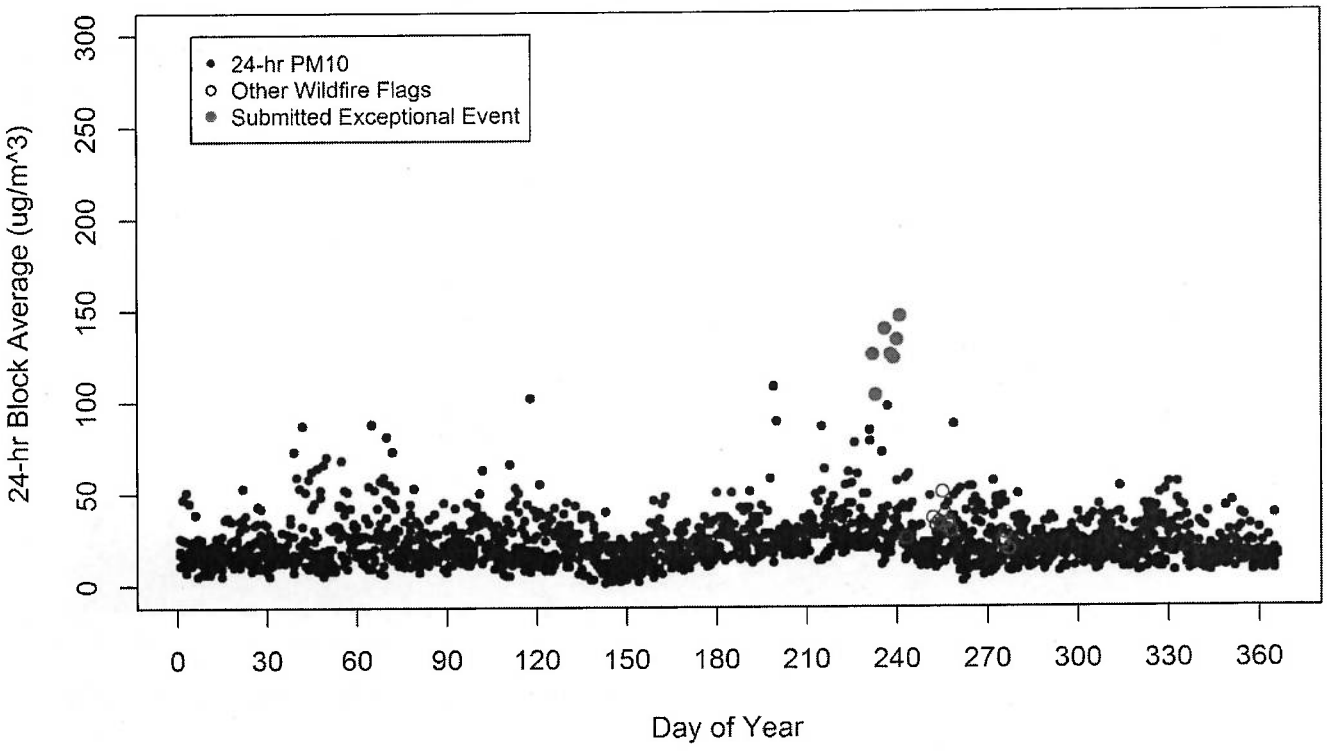


Figure 8. Libby Daily Average PM_{10} Concentrations from 2011-2016

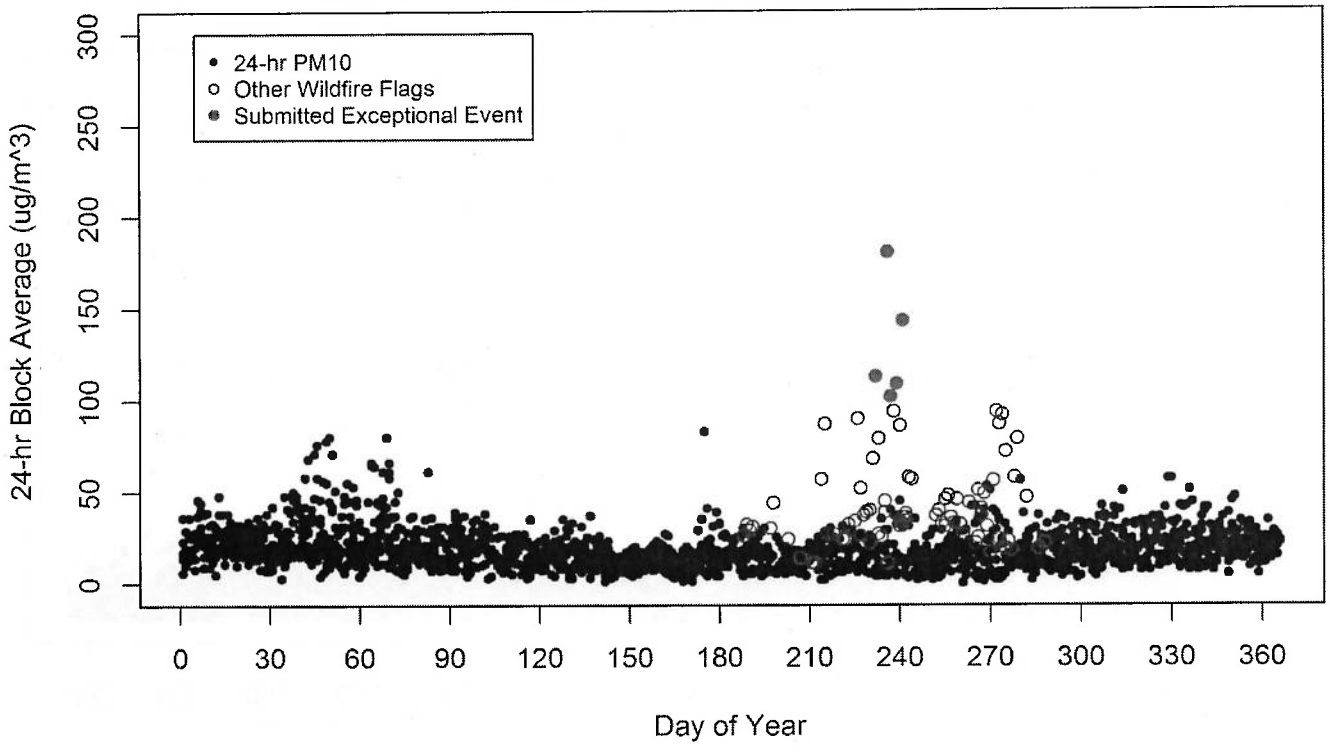


Figure 9. Missoula Daily Average PM_{10} Concentrations from 2011-2016

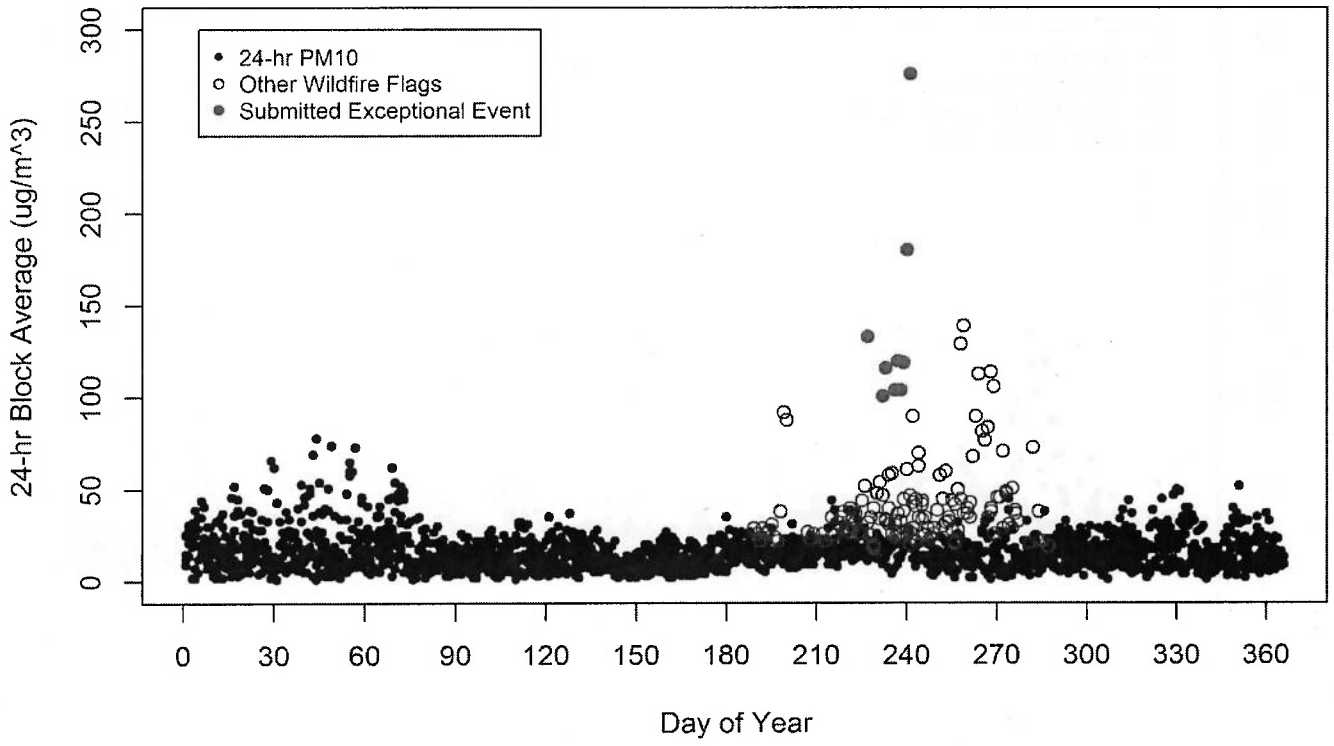


Figure 10. Thompson Falls Daily Average PM_{10} Concentrations from 2011-2016

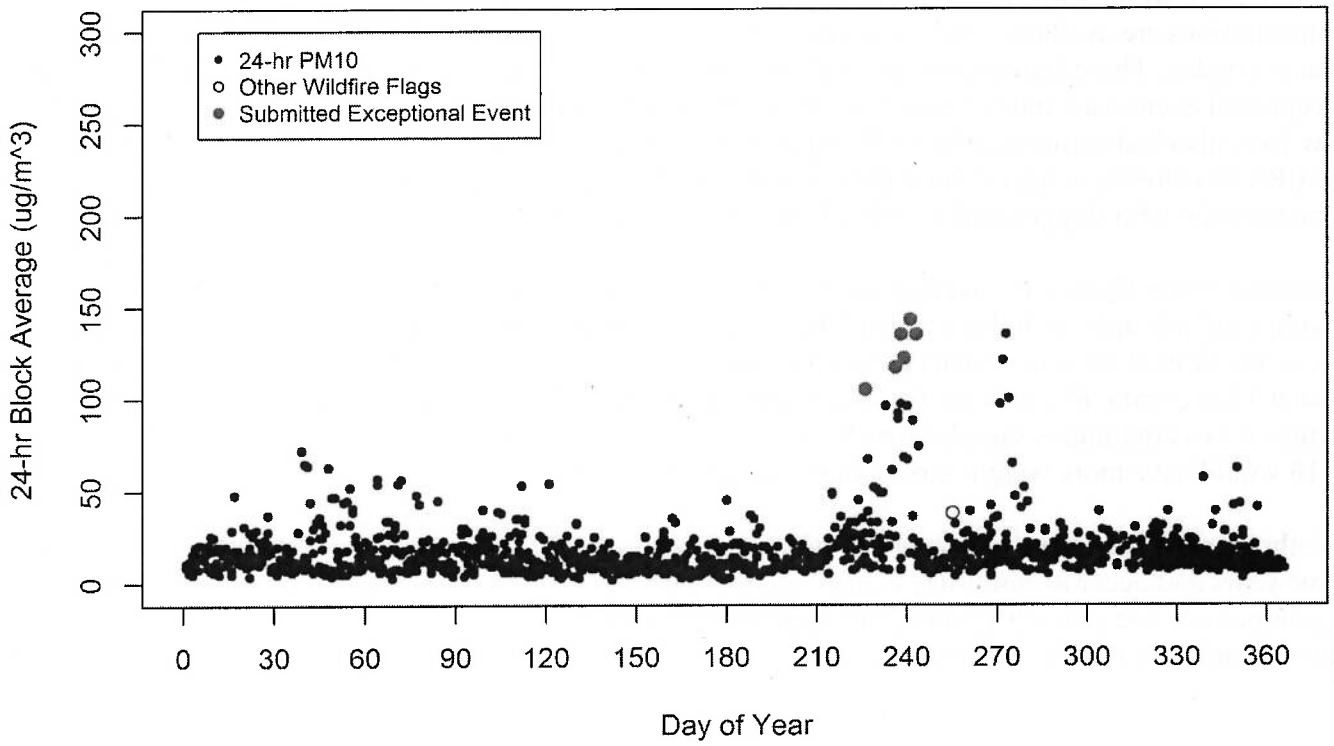


Figure 11. Whitefish Daily Average PM_{10} Concentrations from 2011-2016

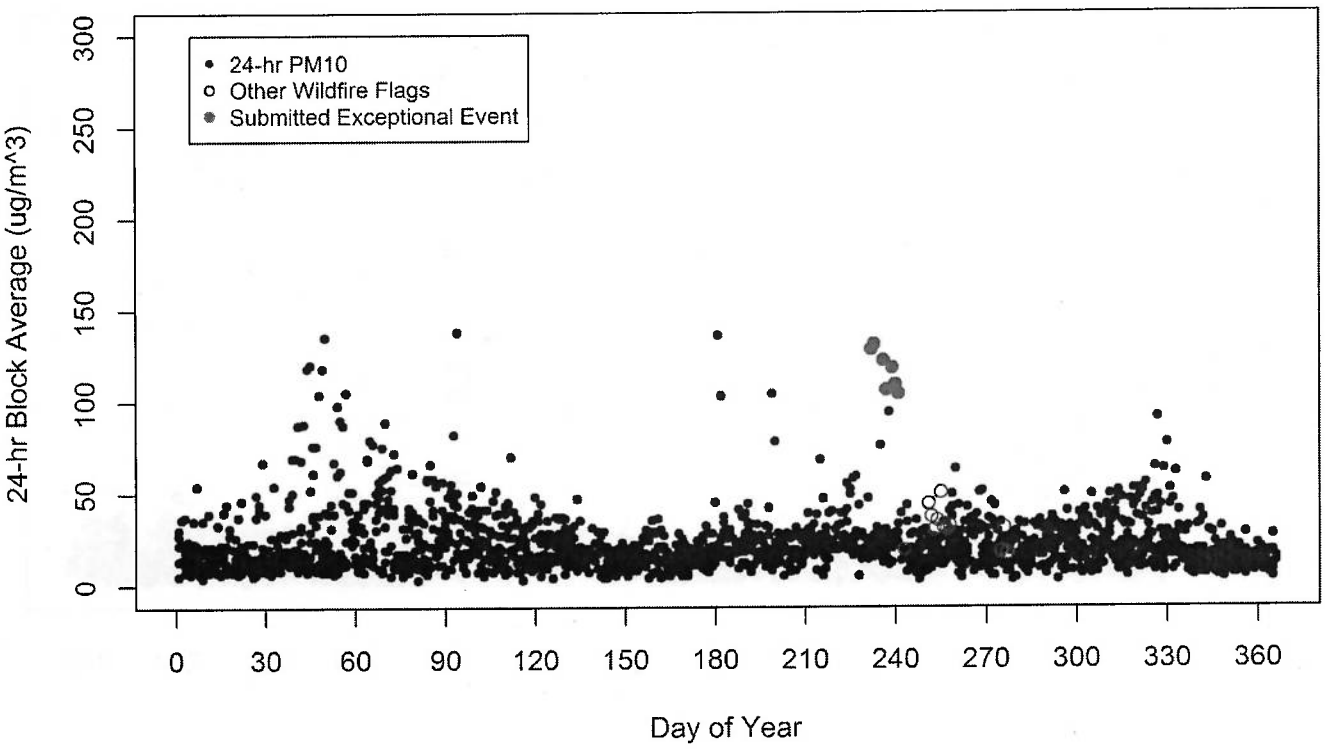


Figure 12 through Figure 18 show the average daily PM_{10} concentrations at the seven sites from 2011 through 2016 with each year plotted as a single color. The data are plotted as a line where daily concentrations are available, and as a point if there were only filter-based data collected less frequently than every day. These figures also show the 99th percentiles for the data with the flagged and submitted exceptional event data under consideration herein included and excluded (data for years prior to 2015 may have also had demonstrations submitted, but those data are included in the following charts even if the EPA has already acted on those demonstrations). In addition, they display the average daily concentration with flagged and submitted exceptional event data excluded.

As shown in the figures, the average daily PM_{10} concentrations are generally below 30 $\mu g/m^3$. Thompson Falls appears to have a much higher daily average around the end of August, but this may be due to the limited amount of daily data at that site. From 2011 through 2013, or 3 out of the 6 years of data at Thompson Falls, data are from filter-based samples collected once every 6 days. In 2013, the site switched to a continuous sampler which provided daily data. Therefore, high values in 2014 through 2016 would have more weight during that time period.

Another visible pattern is daily concentrations exceeding the 99th percentile generally occur within the same years and occur as multi-day events rather than single isolated days spread evenly throughout the 5-year period. The years 2012 and 2015 appear to have the highest concentrations and have the most daily values over the 99th percentiles.

Figure 12. Butte Daily PM_{10} Concentrations for 2011-2016

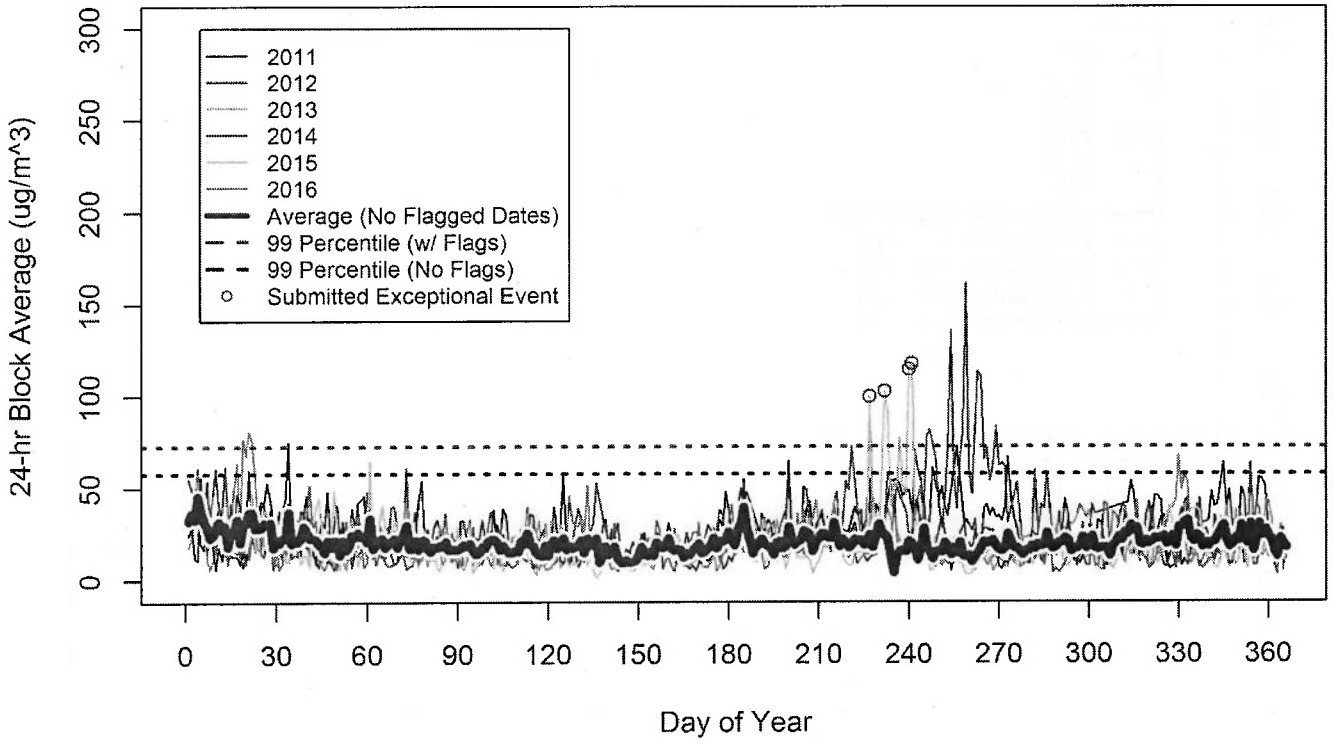


Figure 13. Columbia Falls Daily PM_{10} Concentrations for 2011-2016

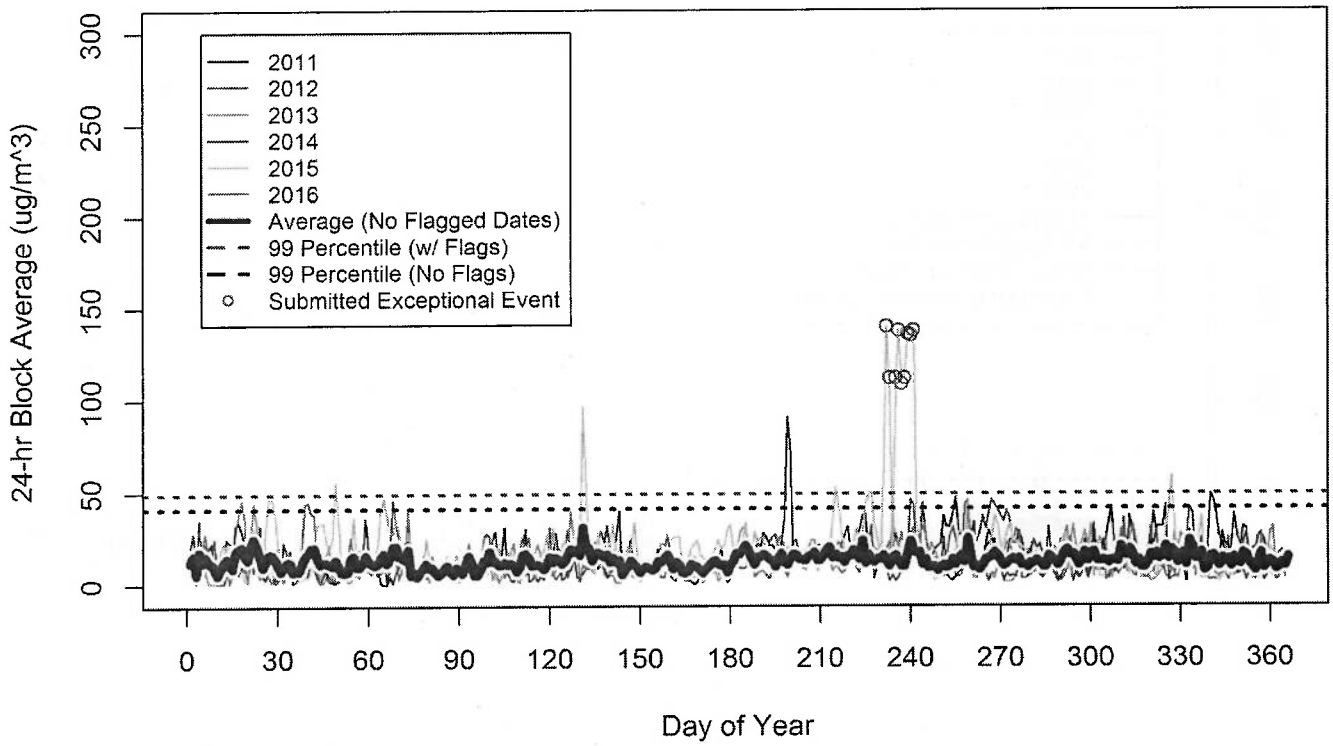


Figure 14. Kalispell Daily PM_{10} Concentrations for 2011-2016

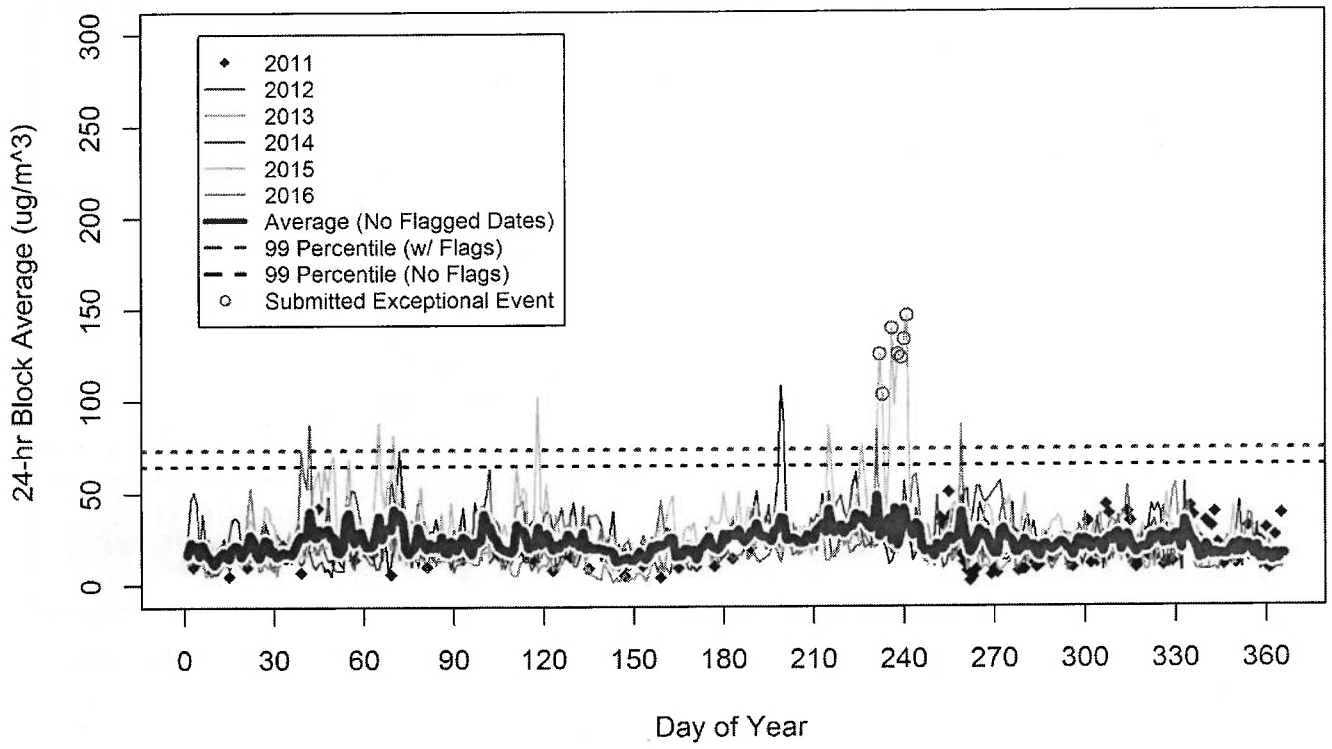


Figure 15. Libby Daily PM_{10} Concentrations for 2011-2016

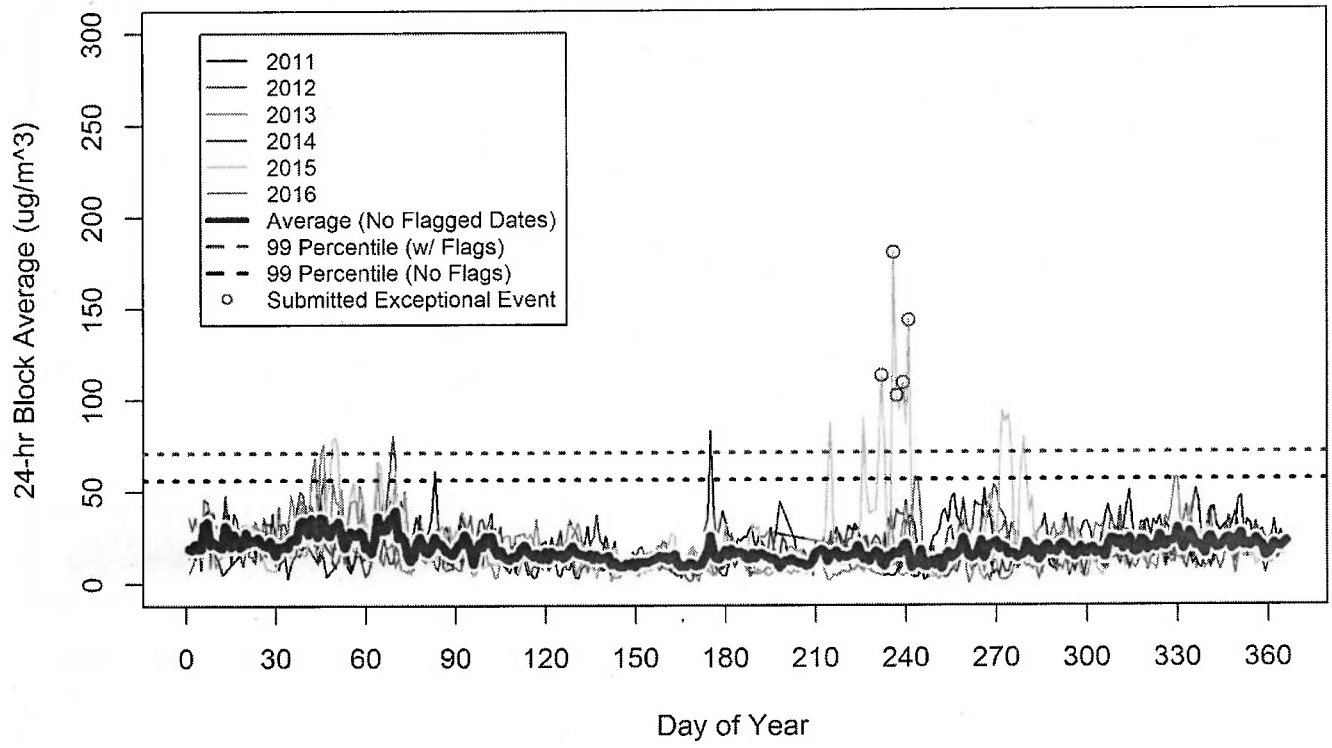


Figure 16. Missoula Daily PM_{10} Concentrations for 2011-2016

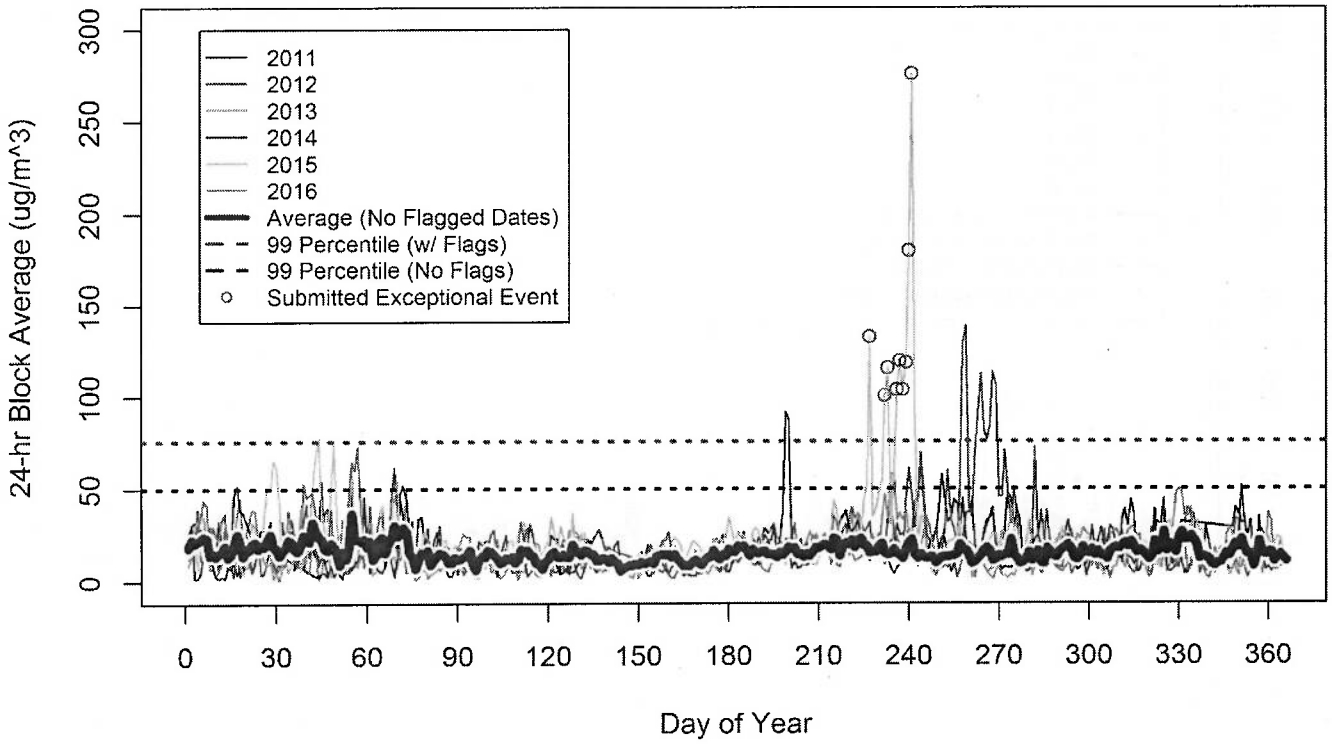


Figure 17. Thompson falls Daily PM_{10} Concentrations for 2011-2016

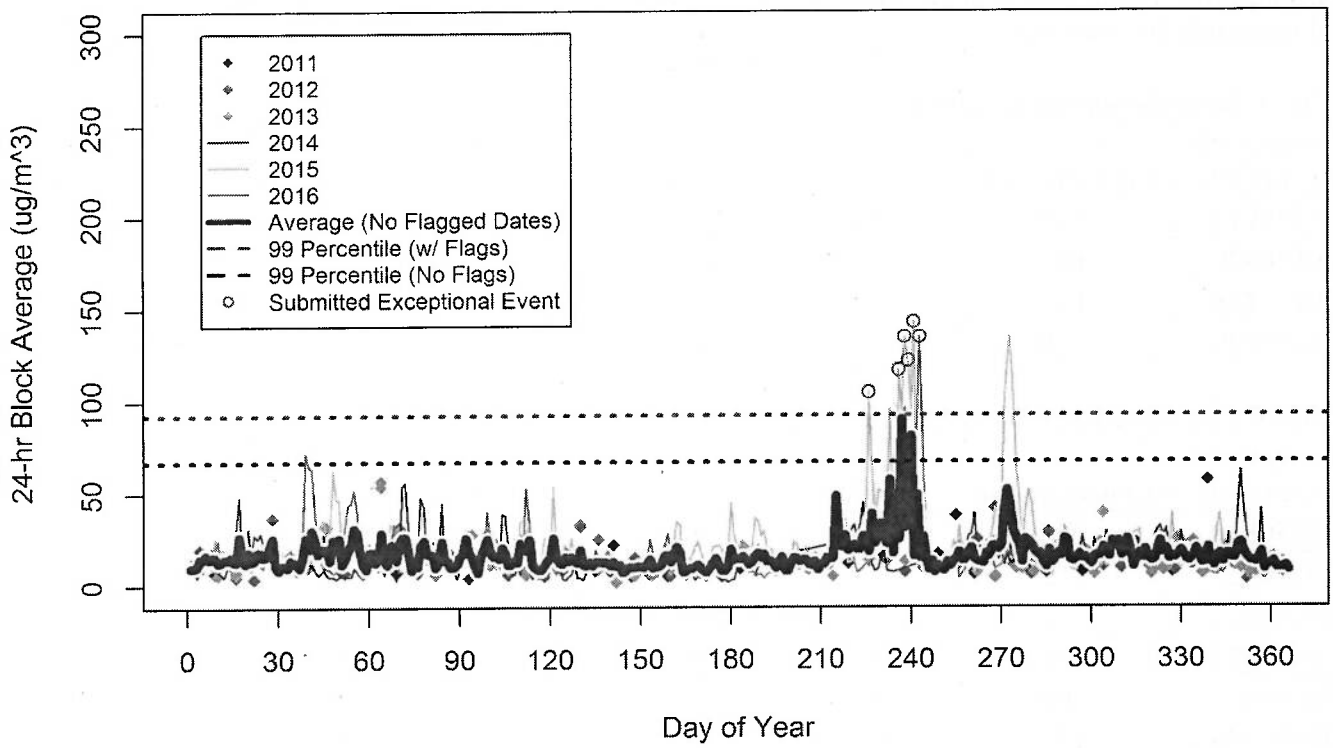


Figure 18. Whitefish Daily PM_{10} Concentrations for 2011-2016

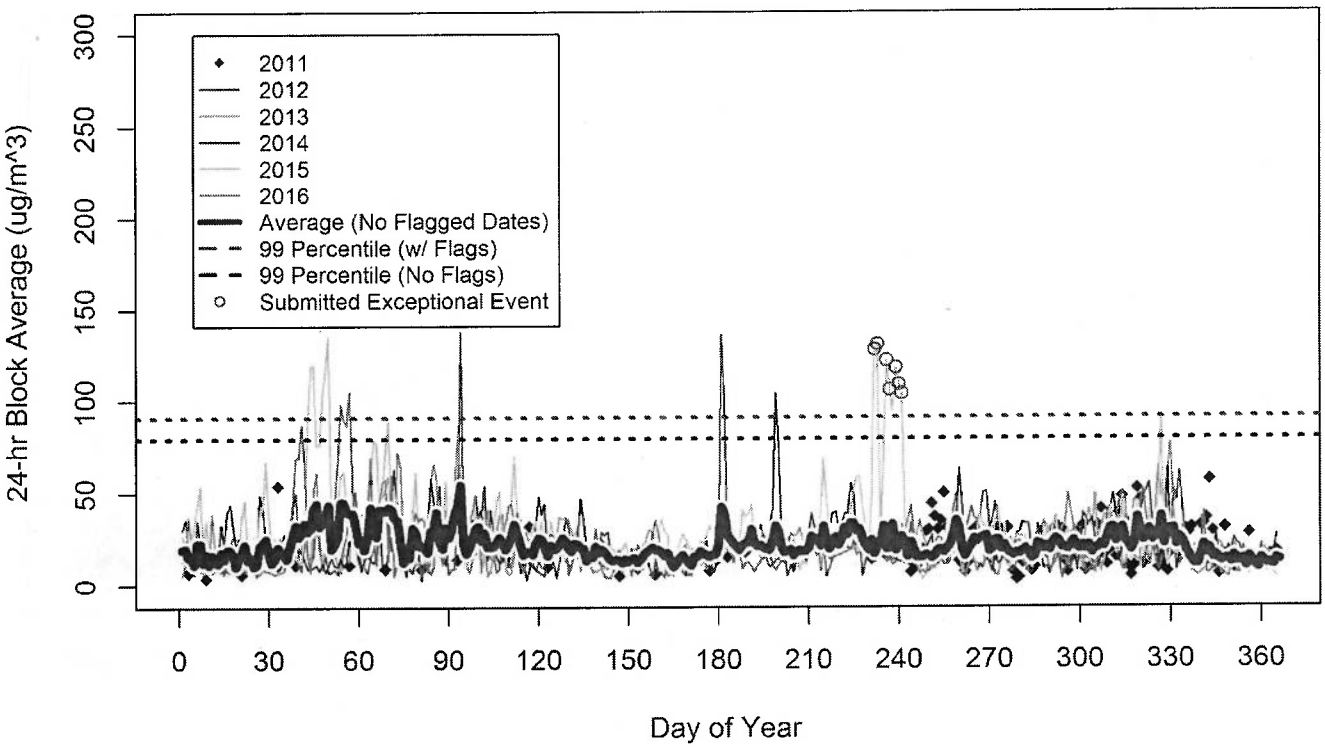


Table 4 through Table 10 show the date of submitted exceptional event requests, the associated concentration, 1-year rank and percentile (for their respective year), and the 6-year rank (for 2011-2016) and percentile for each site.

Table 4. Butte Submitted Exceptional Events Rank

Exceptional Event Date	Concentration	1-yr Rank	1-yr Percentile	6-yr Rank	6-yr Percentile
20150815	100	4	98.82	8	99.62
20150820	103	3	99.12	7	99.67
20150828	115	2	99.41	4	99.81
20150829	118	1	99.71	3	99.86

Table 5. Columbia Falls Submitted Exceptional Event Rank

Exceptional Event Date	Concentration	1-yr Rank	1-yr Percentile	6-yr Rank	6-yr Percentile
20150820	140	1	99.72	1	99.95
20150821	112	8	97.75	8	99.57
20150823	112	7	98.03	7	99.63
20150824	138	3	99.15	3	99.84
20150825	109	9	97.46	9	99.52
20150826	112	6	98.31	6	99.68
20150827	136	4	98.87	4	99.79
20150828	135	5	98.59	5	99.73
20150829	138	2	99.44	2	99.89

Table 6. Kalispell Submitted Exceptional Event Rank

Exceptional Event Date	Concentration	1-yr Rank	1-yr Percentile	6-yr Rank	6-yr Percentile
20150820	125	5	98.62	5	99.73
20150821	103	7	98.07	8	99.58
20150824	139	2	99.45	2	99.89
20150826	125	4	98.9	4	99.79
20150827	123	6	98.35	6	99.68
20150828	133	3	99.17	3	99.84
20150829	146	1	99.72	1	99.95

Table 7. Libby Submitted Exceptional Event Rank

Exceptional Event Date	Concentration	1-yr Rank	1-yr Percentile	6-yr Rank	6-yr Percentile
20150820	113	3	99.02	3	99.85
20150824	180	1	99.67	1	99.95
20150825	102	5	98.37	5	99.76
20150827	109	4	98.7	4	99.8
20150829	143	2	99.35	2	99.9

Table 8. Missoula Submitted Exceptional Event Rank

Exceptional Event Date	Concentration	1-yr Rank	1-yr Percentile	6-yr Rank	6-yr Percentile
20150815	133	3	99.18	4	99.81
20150820	101	9	97.53	14	99.34
20150821	116	6	98.36	8	99.63
20150824	104	8	97.81	13	99.39
20150825	120	4	98.9	6	99.72
20150826	104	7	98.08	12	99.44
20150827	119	5	98.63	7	99.67
20150828	180	2	99.45	2	99.91
20150829	276	1	99.73	1	99.95

Table 9. Thompson Falls Submitted Exceptional Event Rank

Exceptional Event Date	Concentration	1-yr Rank	1-yr Percentile	6-yr Rank	6-yr Percentile
20150814	105	7	98.06	8	99.38
20150824	117	6	98.33	7	99.45
20150826	135	3	99.17	4	99.69
20150827	122	4	98.89	5	99.61
20150829	143	1	99.72	1	99.92
20160830	135	1	99.69	2	99.84

Table 10. Whitefish Submitted Exceptional Event Rank

Exceptional Event Date	Concentration	1-yr Rank	1-yr Percentile	6-yr Rank	6-yr Percentile
20150820	128	3	99.13	5	99.74
20150821	131	2	99.42	4	99.79
20150824	122	4	98.84	6	99.68
20150825	106	10	97.09	12	99.37
20150827	118	6	98.26	8	99.58
20150828	109	9	97.38	11	99.42
20150829	104	11	96.8	14	99.26

In conclusion, the comparison to historical data shows that the submitted exceptional events in the summer of 2015 and 2016 are unseasonably high when compared to historical concentrations unaffected by wildfire smoke. Historically, only wildfire-impacted data are comparable to the 2015-2016 submitted exceptional events in summer months, and the 2015-2016 submitted exceptional events are among the highest values recorded over the evaluated period considering all seasons.

Evidence of Transport

Montana DEQ publishes Wildfire Smoke Updates on their website (http://deq.mt.gov/air/FireUpdates) for each smoke-impacted day in the state each year. These updates provide a summary, report, and forecast of the smoke-impacts in affected areas, and may be published multiple times per day depending on conditions. Updates may include a narrative of each event, photographs from affected areas, satellite images, NOAA smoke narrative for satellite images, NOAA smoke plume maps, and the health effect categories for cities and towns within the state for that day. Updates help to inform the public of areas affected by the smoke, understand where smoke may be coming from, determine potential health effects, and ways to reduce exposure. Past updates are archived on the Montana official state website for select years, and Montana DEQ has included the entirety of the Wildfire Smoke Updates for each day submitted in the demonstration.

The EPA views these Wildfire Smoke Updates as sufficient for establishing evidence of transport of fire emissions from the fires to the monitors for each submitted exceptional event day.

Table 11 lists the pages in the Montana DEQ's demonstration that pertain to relevant evidence for each date.

Table 11. Documentation of Evidence of Transport

Submitted Exceptional Event Date	**Pages in Montana Demonstration**	**Quality of Evidence**	**Met Criteria**
August 14, 2015	54-67	Sufficient	Yes
August 15, 2015	68-73	Sufficient	Yes
August 20, 2015	115-126	Sufficient	Yes
August 21, 2015	126-138	Sufficient	Yes
August 23, 2015	148-154	Sufficient	Yes
August 24, 2015	154-165	Sufficient	Yes
August 25, 2015	165-176	Sufficient	Yes

August 26, 2015	176-188	Sufficient	Yes
August 27, 2015	188-198	Sufficient	Yes
August 28, 2015	198-210	Sufficient	Yes
August 29, 2015	210-243	Sufficient	Yes
August 30, 2016	282-287	Sufficient	Yes

Not Reasonably Controllable or Preventable

The EER presumes that wildfire events on wildland are not generally reasonable to control or preventable.

Figure 19 displays the MODIS fire detections at a spatial resolution of 1 km from August 8 through August 29, 2015. The 1-km footprint of the MODIS pixel for each fire detection is displayed in red. It is apparent that many fires were present in the area during the time which the 2015 data were flagged as exceptional events. A single wildfire impacted Thompson Falls in 2016.

Many of the 2015 fires were caused by lighting and burned in BLM and Forest Service wildlands (Figure 3), and the 2016 Copper King Fire burned in the Lolo National Forest. Given this information, and the lack of compelling evidence to the contrary, the fires impacting Montana in August 2015, and Thompson Falls on August 30, 2016, are considered wildfires on wildlands, and therefore were not reasonable to control or preventable.

Figure 19. Footprint of fires detected on MODIS images from August 8 through August 29 2015 in northwestern United States.[8]

Natural Event or Event Caused by Human Activity That is Unlikely to Recur

40 CFR 50.1 defines a wildfire as "any fire started by an unplanned ignition caused by lightning; volcanoes; other acts of nature; unauthorized activity; or accidental, human-caused actions, or a prescribed fire that has developed into a wildfire. A wildfire that predominantly occurs on wildland is a natural event." Since the fires affecting Montana in August 2015, and the Thompson Falls monitor on August 30, 2016, were fires largely on wildlands with unplanned ignitions, the exceptional events are considered natural events.

Schedule and Procedural Requirements

The EER requires that exceptional event demonstration submissions be accompanied by evidence that the required public comment process was followed, include any comments received, and address with the submission those comments received which dispute or contradict the factual evidence provided with the demonstration. Table 12 summarizes the EPA's review of these procedural requirements.

[8] Data were downloaded as KML files that were generated by the USDA Forest Service Active Fire Mapping Program.

Table 12. EPA's Analysis of Schedules and Procedural Criteria

Criterion	Reference	Details	Criterion Met?
Did the agency provide prompt public notification of the event?	40 CFR 50.14 (c)(1)(i)	The public comment notice and period are detailed in the state demonstration.	Yes
Did the agency submit an Initial Notification of Potential Exceptional Event and flag the affected data in the EPA's Air Quality System (AQS)?	40 CFR 50.14 (c)(2)(i)	The initial notification was delivered via phone.	Yes
Did the initial notification and demonstration submittals meet the deadlines for data influenced by exceptional events for use in initial area designations, if applicable? Or the deadlines established by the EPA during the Initial Notification of Potential Exceptional Events process, if applicable?	40 CFR 50.14 Table 2 40 CFR 50.14 (c)(2)(i)(B)	The demonstration was submitted on April 24, 2017. There was no established deadline at that time.	Yes
Was the public comment process followed and documented?	40 CFR 50.14 (c)(3)(v)	No public comments were received, and this is documented in the state's demonstration.	Yes
Has the agency met requirements regarding submission of a mitigation plan, if applicable?	40 CFR 51.930(b)	The mitigation plan is not due until September 30, 2018, but Montana DEQ has submitted a draft mitigation plan, and Region 8 EPA has provided comments.	NA

CONCLUSION

After reviewing the documentation provided by Montana DEQ, and conducting additional analyses presented here in the TSD, the EPA has determined that values exceeding the PM_{10} NAAQS at Libby on August 24, 2015, and Missoula on August 28, 2105, and August 29, 2015, meet the definition of an exceptional event: the event affected air quality in such a way that there exists a CCR between the event and the monitored exceedance, was not reasonably controllable or preventable, and meets the definition of a natural event. The EPA has also determined that Montana DEQ has satisfied the procedural requirements for data exclusion under the EER.

In addition, for those values in August 2015, and the one value in August 2016, that exceeded the LMP eligibility threshold of 98 $\mu g/m^3$ but were under 155 $\mu g/m^3$, the EPA concurs that the elevated PM_{10} concentrations meet the general definition and criteria for exceptional events (natural event, or

exceptional event that is not reasonably controllable or expected to recur), and thus in accordance with EPA guidance[9] those values may be excluded when considering whether the areas are eligible for use under the LMP option. The EPA has also determined that Montana DEQ has satisfied the procedural requirements for data exclusion for these values that apply to the EER.

This concurrence does not constitute final EPA action regarding any matter on which the EPA is required to provide an opportunity for public comment. In particular, this applies to determinations regarding the attainment status or classification of the area. Final actions will take place only after the EPA completes notice and comment rulemaking on those determinations.

[9] Update on Application of the Exceptional Events Rule to the PM_{10} Limited Maintenance Plan Option, US EPA, William T. Harnett, Director, Air Quality Policy Division, OAQPS, May 7, 2009, https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/20090507_harnett_lmp_pm10_update_exc_event.pdf.